

Appln No. 09/636,000

Amdt date August 19, 2005

Reply to Office action of February 22, 2005

REMARKS/ARGUMENTS

In the Office action dated February 22, 2005, claims 1 - 5, 7 - 12 and 17 - 21 were rejected under 35 U.S.C. §§ 101, 102 or 103. Claims 6 and 13 - 16 were allowed. The Examiner also rejected Applicant's claim for priority.

By this Amendment, Applicant is amending the specification, amending claim 2 and adding claims 22 - 30. Claims 1 - 30 are now presented for consideration.

Applicant's Response to the Rejection of the Claim for Priority

Regarding Applicant's claim for priority, Applicant has obtained a copy of the file history of U.S. Provisional Application No. 60/147, 506 (hereafter referred to as "the provisional application") and has conducted an investigation regarding the inventorship of the present application and the provisional application. As a result of this investigation, Applicant filed on August 17, 2005 a Petition to change the inventorship of the present application. Once the Petition is granted, the present application will list Stephen Pope, Aki Shohara, Yue Chen and Bryan Chase as inventors. In addition, Applicant filed on August 16, 2005 a Petition to change the inventorship of the provisional application. Once the Petition is granted, the provisional application will list Aki Shohara, Yue Chen and Bryan Chase as inventors.

Accordingly, once the Petitions are granted, the present application and the provisional application will have at least one inventor in common.

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Applicant's Response to the Rejections under 35 U.S.C. § 101

Claims 1, 8 - 12 and 17 - 21 were rejected under 35 U.S.C. § 101. This rejection is based on the lack of at least one common inventor between the present application and the provisional application. Once the Petitions to correct inventorship discussed above are granted, this rejection should be mute.

Applicant's Response to the Rejections under 35 U.S.C. § 102

Claims 1, 8 - 12, 17 - 21 were rejected under 35 U.S.C. § 102(f). This rejection is based on the lack of at least one common inventor between the present application and the provisional application. Once the Petitions to correct inventorship discussed above are granted, this rejection should be mute.

Applicant's Response to the Rejections under 35 U.S.C. § 103

Claims 1 - 3, 7, 11 and 12 were rejected as being unpatentable over Cesari, U.S. Patent No. 5,844,947, in view of Beat, U.S. Patent No. 5,687,352. Claims 1 and 11 are independent.

Beat is cited only for teaching Gray coding. Accordingly, Cesari is cited as teaching the remaining elements of the claims.

Cesari is directed to "a method and apparatus for generating branch metrics that are combinations of autocorrelation and cross correlation terms." The terms "are constructed by first calculating and storing components of the

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autocorrelation and cross correlation terms at a symbol instant. Once calculated and stored, predetermined ones of the autocorrelation components and the cross correlation components are selected. The selected autocorrelation components and cross correlation components, or their inverse as predetermined, are combined to produce a branch metric. Other predetermined combinations of the stored components of autocorrelation and cross correlation terms, or their inverse, are combined to produce other branch metrics at the same symbol instant." Cesari, Summary at column 2, lines 25 - 39.

The circuit for generating branch metrics is illustrated in Figure 5. Here, a summer 622 (bottom of Figure 5) combines cross correlation terms 650, 652 and 630 with auto correlation terms 656, 658 and 660 to generate a branch metric 664. As discussed at column 8, lines 63 - column 9, line 25, however, the terms 650 - 660 are combined each time a branch metric is generated. Thus, the circuit does not maintain and use a prior branch metric to generate a new branch metric.

In contrast, claims 1 and 11 recite, in part: "computing branch metrics for the trellis by setting a first portion of the branch metrics equal to a coefficient which models an autocorrelation of an impulse response of a channel and setting a second portion of the branch metrics equal to a sum or difference of a prior value of a branch metric and a coefficient which models an autocorrelation of an impulse response of a channel." The cited references considered either independently or in combination thus do not teach or suggest all of the

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limitations of claim 1 or claim 11. Accordingly, claims 1 and 11 are not obvious in view of these references.

Claims 2 - 3 and 7 that depend on claim 1 and claim 12 that depends on claim 11 also are patentable over the cited references for the reasons set forth above. In addition, these dependent claims are patentable over the cited references for the additional limitations that the dependent claims contain.

New Claims 22 - 30

New claims 22 - 30 are directed to an estimator and a method that are similar to claims 1 and 11 previously presented during the prosecution of this application. Claims 22 and 26 are independent.

The previous claims were rejected under 35 U.S.C. § §103 as being unpatentable over Cooper, U.S. Patent No. 5,502,735, in view of Beat or were rejected under 35 U.S.C. § §103 as being unpatentable over Jekal, U.S. Patent No. 6,035,428, in view of Beat.

Applicant submits that claims 22 - 30 are not obvious in view of the cited references. First, there was no motivation in the art to combine Beat with Cooper, Jekal, Cesari or any of the other references of record. Second, such a combination does not teach or suggest the specific limitations of claim 22 or claim 26.

Applicant has discovered that advantages may be obtained in generating branch metrics by modifying the time-honored order of some of the computations. In addition, Applicant discovered

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that certain advantages may be obtained through the use of various combinations of Gray code sequences.

In contrast, there was no suggestion in the art that the sequencing of states during branch metric generation could or should be modified. Given the lack of such a suggestion it cannot be said that there was motivation for one skilled in the art to modify the sequencing of states. Given the lack of any motivation to modify this sequencing, there is simply no basis for suggesting that one skilled in art possessed the requisite motivation for combining Beat with any of the other cited references.

Moreover, Beat is not directed to the field of signal processing as are Cooper, Jekal or Cesari. Hence, if one skilled in the art was attempting to improve a signal processing circuit as in Cooper, Jekal or Cesari, he or she would not have been motivated to refer to Beat for suggestions.

Finally, even assuming that there was a motivation to combine Beat with any of the other references (which as discussed above there is none), there is no teaching or suggestion in the art to combine the references in a manner that provides the claimed invention. As discussed above, there was no teaching or suggestion regarding modifying state sequences. Hence, there is no teaching or suggestion to combine the specific portion of Beat cited by the Examiner with the specific portions of Cooper, Jekal or Cesari cited by the Examiner in a manner that provides the specific structure and methods claimed.

Accordingly, Applicant respectfully submits that claims 22 and 26 are not obvious in view of the cited art. Claims 23 - 25

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and 27 - 30 that depend on claim 22 or claim 26 also are patentable over the cited references for the reasons set forth above. In addition, these dependent claims are patentable over the cited references for the additional limitations that the dependent claims contain.

CONCLUSION

For the foregoing reasons Applicant submits that the claims are patentable over the references of record. Reexamination and reconsideration are respectfully requested.

Respectfully submitted,
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626/795-9900

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